Homes & Communities Agency

DEVELOPMENT

USER MANUAL

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Context and potential uses

Development viability for planning is an increasingly important issue for the local authorities and their partners. Recent and forthcoming changes in planning including the introduction of the Community Infrastructure Levy, and the HCA's 2011- 2015 Affordable Homes Programme Framework[1] all impact on development viability.

The HCA Development Appraisal Tool (DAT) is a site specific development viability tool that is freely available from the HCA website, (see link below) to any organisation that wishes to use it. It is designed to inform the development management process by appraising the viability of specific sites.

DAT accommodates the changes in affordable housing provision being introduced in the 2011-14 spending review period, and supersedes the HCA's 2009 Economic Assessment Tool (EAT v2) planning obligations viability tool. A complementary HCA Area Wide Viability Model[2] is also available which is designed to inform strategic viability modelling to evidence and test policy for affordable housing targets and CIL across a wider area.

The Development Appraisal Tool is intended for use for small and medium size schemes with a development period of up to ten years. The model has been developed from the EAT by the HCA, and has been independently tested for its accuracy of calculation.

Uses of the tool could include:

- Analysis of a scheme when considering whether the level of required planning obligations is viable
- Helping a local authority consider the balance between planning obligations and affordable housing
- Assessing the case for financial support from the HCA under the Affordable Homes Programme
- Assessment of the potential land value where a local authority is considering a disposal

National planning policy guidance expects Local Planning Authorities (LPAs) to define their approach to seeking developer contributions, and make the best possible use of planning obligations to improve affordable housing delivery, through mixed tenure developments. This implies effective but realistic affordable housing policy targets, and thresholds supported by evidence of their economic viability, together with viability appraisal of specific sites at an early stage of the development management process.

If local authorities require assistance in using the tool they should contact their local representative of the HCA., or email DATEnquiries@hca.gsi.gov.uk

Limitations
A maximum of ten years of monthly cash flows can be modelled
Five sales 'phases' plus two phases for Affordable Housing and private rent are available
All Cash flows are modelled as 'linear' across the specified period (though phasing can be used to approximate curves)

[1] http://www.homesandcommunities.co.uk/sites/default/files/our-work/affordable-homes-framework.pdf
[2] http://www.homesandcommunities.co.uk/ourwork/area-wide-viability-model
http://www.homesandcommunities.co.uk/ourwork/development-appraisal-tool

Purpose and principles

2.1 Purpose

The tool is an 'open source' cash flow model which can model affordable or mixed tenure housing development, with scope to capture ancillary commercial uses. Based on a series of assumptions about costs, values and reasonable profit, the model calculates the surplus or deficit created by a given scheme. It also allows estimation of the level of affordable housing and other s106 requirements that can be supported by a scheme. In version 2 onwards there is an option to compute a residual land value (RLV), instead of entering a land value to derive the surplus/(deficit).

2.2 Principles

By default the model is a 'gap funding' tool in that land value and reasonable developer's profit can be treated as inputs and the deficit or surplus arising from a given scheme is an output. Input of the current land valuation is a mandatory field because viability needs to be based on current information. However where the objective is to arrive at a residual land value then land values should to be iteratively input (or an Excel goal seek used) until a zero surplus is arrived at, such a land value is the residual.

A key aspect of the model is that it is 'open' in the sense that all parties can see all data and computations, which is intended to bolster a collaborative approach.

The model also demonstrates the financial impact of the level of affordable housing on the development and allows parties to compare affordable housing with planning obligations which consist of financial payments.

The model is based on the principle that a viability appraisal is taken at a point in time, taking account of values and costs at that date. A site may be purchased some time before a viability assessment takes place and circumstances may change. That is part of the developer's risk. The site value must equate to the market value of the site at the date of the appraisal. Holding costs attributable to the purchase of the site should not therefore be allowed, as the site value will be updated.

2.3 HCA programmes

The HCA 2011-2015 Affordable Homes Programme Framework document includes the following comments on s106 schemes.

> *"In order to ensure the best value for public resources, there will be a strong presumption that funding is not required for affordable home ownership on s106 sites, as planning gain is expected to provide sufficient subsidy".(4.6)*

The Development Appraisal Tool is therefore primarily intended to assist in determining viability.

2.4 Values for assumptions

It is for the parties to the planning process to determine the values for all key assumptions. However costs always need to be interpreted in relation to a good understanding of the particular site, for example

- Brownfield – what are the site constraints that may impact the scheme?
- Greenfield – to what degree will new infrastructure and services be required?
- What is the scale of scheme, property type mix, and especially how many storeys are being built?
- Are there special requirements e.g. underground parking, local standards requirements?

Financial inputs, such as rate of interest, rental yields, and returns will vary over time and according to the organisation carrying out the development. In addition they partially depend on the scheme itself, particularly its perceived risk characteristics.

The open market values of property are crucial, and one data source is the Department for Communities and Local Government Housing Market data, however knowledge of the local market is crucial.

The use of scenarios and sensitivity analysis will often be helpful where there is either uncertainty or disagreement between parties over key values (see section 6.1).

LPA's may request the assistance of their local HCA contacts to act as a 'critical friend' in discussions with developers who are seeking to reduce the level of planning obligations on a scheme supported by a viability assessment. The HCA will always endeavour to provide its independent opinion, but will not become the final decision maker on issues, such as the appropriate level for an assumption, as these must reside with the relevant accountable body.

The HCA is not able to provide evidence on viability to a planning appeal or examination in public and so local authorities may still require independent advice on the appropriate values to use if they cannot reach agreement with the developer.

Entering a scheme

3.1 How the model works

The development appraisal tool operates on a monthly cash-flow basis. Detailed guidance on use is held within the relevant part of the model, including precise definitions of terms such as 'build cost' and 'abnormals'.

The affordable rent valuation is computed from the net cash flows and required yields, in line with RICS guidance[3]. It is not driven by the amount a Registered Provider (RP) may have agreed for a purchase transaction, as this may include internal cross subsidy or competitive considerations. Where the price agreed implies such variance from valuation this should be entered separately under 'Other funding' (see below). For Affordable Rent Open market rental values are critical and liable to be subject to both comparison with local market information sources, and sensitivity testing. Affordable rents entered in the sheet 'Res-details' are actual values expected to be charged; there is a simple proforma in the notes and memos sheet that may be used to record the market rent/service charge/percentage of market/affordable rent computation (see FAQs regarding testing the affordable rent parameters). Traditionally an 'all risks' yield is used to value fixed property income streams to perpetuity, and this is the default method, but there is also an option to value expected inflated cash flows over 30 years, as RP's often uses this method internally. Either method is appropriate provided suitable capitalisation rates are used.

Similarly **Shared ownership valuation** is made from estimates of expected net cash flows. Primarily this is the addition of the initial sales tranche plus the capital value of the net rent on the unsold proportion. Again the two capital valuation methods above are available. It is also possible to make some speculative estimates of potential values arising from future staircasing sales.

3.2 An open model

For those who choose the 'advanced user' option all computations can be viewed, (but not amended) in the Excel Formula bar. This open approach is intended to build understanding in the tool workings, and trust in results, from all parties. (Note: It is necessary to select the 'advanced user' option to view complete detail).

3.3 Overview

The tool is broadly divided into three sections; Inputs, Computations, and Output. The user needs to work through a number of Input sheets, tabbed from 'left to right'; the exact sequence depends on the complexity of the scheme. In the most straightforward case these would comprise:

Sheet	Contents
The site	Descriptions, size, value
Residential details	Types, numbers and values of each property type for each tenure and build phase. Once complete a button transfers this data to the computation sheets.
Residential phasing	The dates for build and expected sales period.
Residential costs	Build, infrastructure, s106, finance and marketing

After these are complete a residual surplus (deficit) for the development will be computed and displayed at the top of every input sheet.

Additional sheets may be entered for non-residential development, plus notes and computations. More details are given below in the sub-section 'Description of major parts'.

[3] The Valuation of Land for Affordable Housing, RICS, May 2010 http://www.ricsbooks.com/productInfo.asp?product_id=18397

3.4 Look and feel

Simplified or full input can be selected, (see below), but in either case it will be seen that:

- When cells are selected many include ‘pop up’ text with guidance relevant to the particular input. Longer notes are accessed by ‘pointing’ the cursor at nearby cells that have the red Excel ‘comment’ tag.
- Cells appear orange when an input is required to maintain consistency (eg costs for declared units).
- Most cells have warnings for entries outside a feasible value range. Warnings will be given when the inputs are outside the allowed range, and give an indication of the source of the problem, as fig 1a below. Notice this is designed for simple error trapping of clearly erroneous input, it is no way intended to guide values the HCA would deem reasonable.

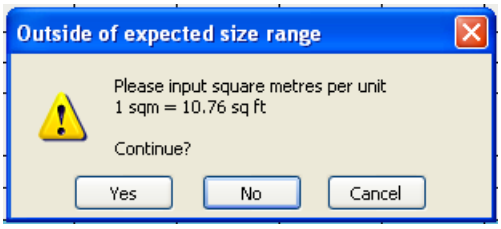

Fig 1a - Input error warning

- Timings are entered as dates (not month numbers as in EAT v2). Invalid dates are barred, otherwise incorrect results would be produced. Restrictions are based on prior input e.g. see Fig 1b.

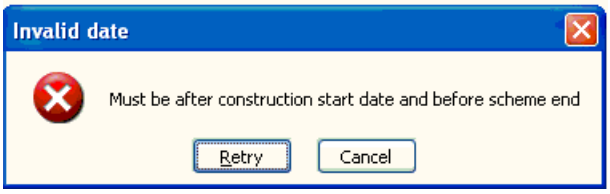

Fig 1b - Input error restriction.

- It is possible to select the ‘Warnings’ sheet at any time, and this will produce a list of mandatory inputs that remain to be entered.
- Phasing, cost and revenue input sheets are automatically ‘compacted’ to only show tenures and property types that have units entered.
- The top line of input sheets shows the resulting valuation once a consistent set of input has been made. Prior to this it displays an ‘incompletion warning’. The list of missing inputs can be found at any time by moving to the ‘Warning’ sheet.

Only sheets with green ‘tabs’ at the bottom of the screen are input sheets where users may need to enter data, for example as in fig 2.

Fig 2 - Tabs for input sheets

The grey tabs are for output sheets which may or may not be examined depending on user requirements, see fig 3.

Fig 3 - Tabs for output sheets

Description of major parts

Selecting the usage mode
Once the legal 'disclaimer' is pressed in version 2 the "Usage Mode" is presented for selection as in Fig 4 below, this determines the type of output from the model. The top option is the standard selection that gives equivalent 'Viability Assessment' functionality to version 1. The second option is similar, except that no land valuation is entered and the model computes to the Residual Land Value. This may be relevant, for example, where public land is being valued for disposal.

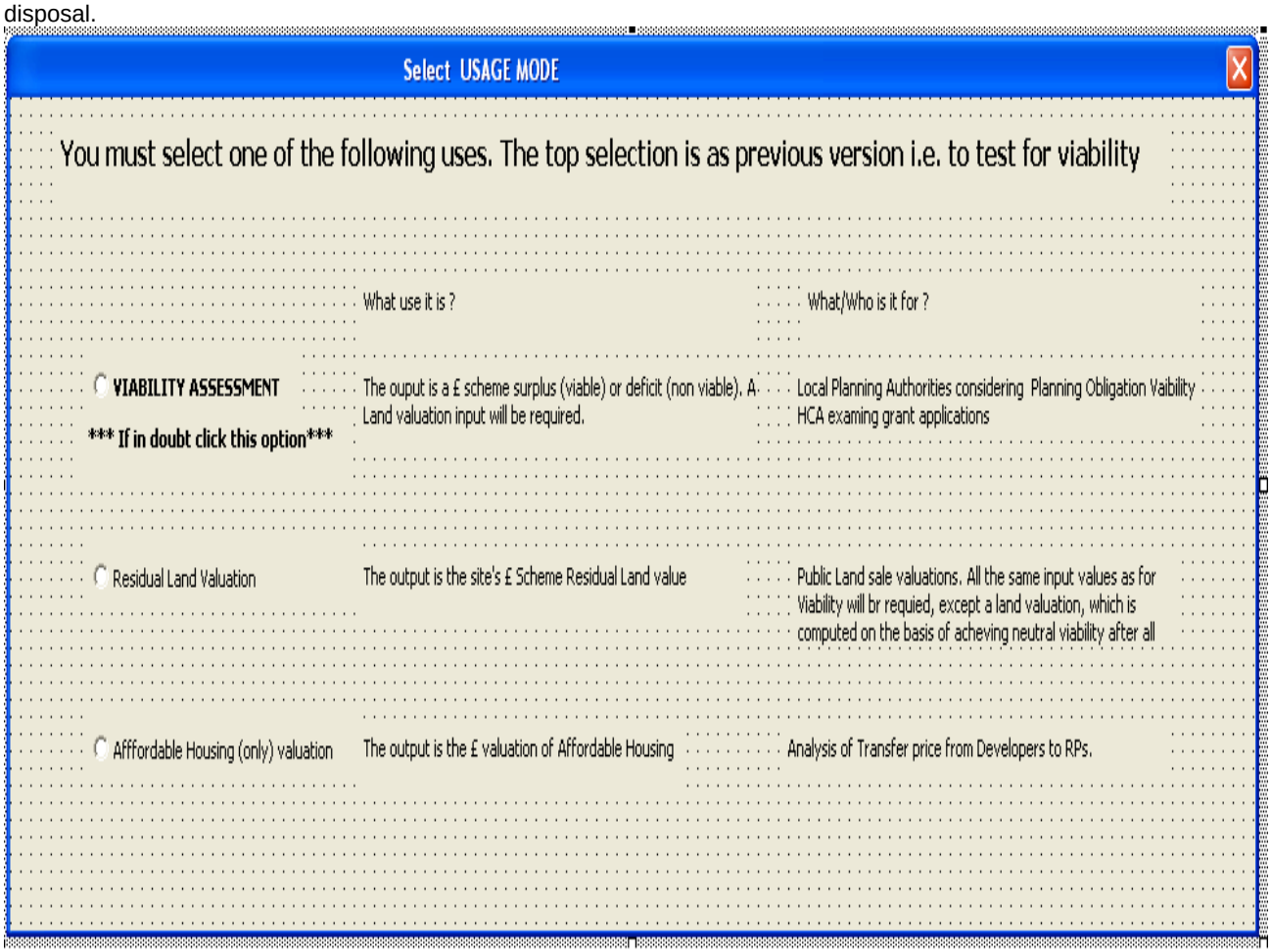
Select USAGE MODE
You must select one of the following uses. The top selection is as previous version i.e. to test for viability
What use it is ?
What/Who is it for ?
VIABILITY ASSESSMENT
*** If in doubt click this option***
The ouput is a £ scheme surplus (viable) or deficit (non viable). A Land valuation input will be required.
Local Planning Authorities considering Planning Obligation Vaibility HCA examing grant applications
Residual Land Valuation
The output is the site's £ Scheme Residual Land value
Public Land sale valuations. All the same input values as for Viability will br requied, except a land valuation, which is computed on the basis of acheving neutral viability after all
Afffordable Housing (only) valuation
The output is the £ valuation of Affordable Housing
Analysis of Transfer price from Developers to RPs.

Figure 4: Selection of the Usage Mode.

The third option is for the situation where it is only required to calculate the value of the Affordable Housing element of a scheme, for example to agree a transfer price from developer to Registered Provider. . The Affordable Homes Framework states (5.15) "our assumption is that the price paid [for affordable housing by a Registered Provider] will be no more than the capitalised value of the net rental stream of the homes." Using the tool in the Affordable Housing Cash flow mode, with suitable assumptions on rents, annual costs, and yields, enables this valuation to be made (notice build cost are irrelevant in this regard). When thus selected a reduced subset of inputs is displayed for completion, and once entered the value at the top of each screen shows the resulting affordable housing element valuation, see fig 5.

Fig 5: The result appears in this format, at the top of the screen

The remainder of this guide assumes the full scheme viability is to be appraised, i.e. the first selection chosen.

4.1 Set-up sheet

The setup option concerns a user selection of screens to be displayed**, no computations are affected, simply the screens displayed**. The simplified data entry option is the quickest completion method as in fig 7.

Fig 7 : Selection of the simplified entry screens

The 'advanced user' option has more extensive input, calculation, and output sheets, see fig 8.

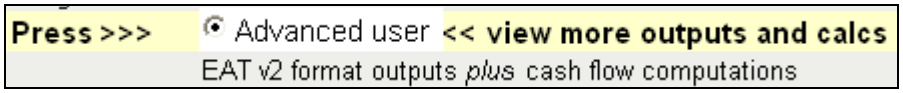

Fig 8: Selection of the advanced user option

There is a final option which includes some further analytical output sheets. In both these more advanced options the screens to be displayed are 'EAT style', 'GLA [toolkit] style', or by default both. The EAT style shows only screens equivalent to the previous EAT model screens, and does not hide unused tenure/phases. GLA style shows the new 'scratchpad' entry and hides unnecessary tenure/phase dates and costs.
The simplified option is recommended, it is always possible to return to this screen at a later stage and reveal the additional screens.

4.2 Site

Basic Scheme Info is input into this sheet, see fig 9. In particular note the distinction between site purchase price and latest valuation. These are key inputs and BOTH are required if financial assistance from the HCA is to be justified. Whilst not preventing computations, full completion of this short sheet is required. For example X-Y co-ordinates allow linkage to a GIS system, and site area is crucial because density is a relevant factor in assessment of results.

As dates are entered the model calculates which month of the development each falls into, this is measured from the appraisal date which is treated a 'day 0' , thus it is a mandatory input. This defaults to the date the appraisal is first opened and it is reasonable to leave this untouched. It may be overwritten with the date at which developer contributions and affordable obligations are to be agreed if this is expected to be significantly later, but it must pre-date any site activities.

Basic Site Details	
FULL VIABILITY ASSESSMENT	
Site Address	**Dummy data**
OS X coordinate	
OS Y coordinate	
Site Reference	
File Source	
Scheme Description	**Mixed tenure examplar with dummy data**
Date of appraisal	
Gross Site Area (hectares)	1.00
Net Residential Site Area (hectares)	0.81
Author & Organisation	
Local Planning Authority	
Land Purchase Price	**1,700,000**
Land Purchase date	01/01/2007
Most recent valuation of the site £	**1,500,000**
Basis of valuation	**Existing Use**
Date of valuation	01/01/2011
Any note on valuation	
Developer of sale units	
Developer of affordable units	
Manager of affordable units	
HCA Investment Partner	
Note on applicant(eg sub partner status)	
HCA Operating Area	

Fig 9: The basic site details

Note that if the Residual and Value option is chosen then a Land Valuation input is not required – this value will be the output of the model, once all other input has been completed.

4.3 Residential details

Where the 'Simplified' option is chosen in the Setup sheet, property types, sizes, numbers, and values are entered in the 'Res Details' sheet, see fig 10. (This may be familiar to some as a 'GLA toolkit' style entry). These are entered on a per property basis for each property type, and also displayed by the tool as per square metre information. A 'control' total for the number of units is entered above the table.

Property is divided into 13 different unit types throughout – bedroom numbers of low-rise flats, high-rise flats, and houses. Any other types (e.g. bungalow) should be entered in the nearest equivalent.

There are two build phases of shared ownership and affordable rent available, and one of social rent. Five open market sales phases are included, and finally two private rent phases have been added. Notice rent entered is that actually payable For AFFORDABLE Rent this will be AFTER REDUCTION from market rent. If it is required to be able to test changes in the AR %, then this must be entered as a formula
ie £Market Rent * AR% {cell R10} ,so type
eg = £120 * R10.
Market rent is after allowance for service charge, and this computation may be recorded in the notes and memo sheet

The five open market build phases may be used to reflect build phases (e.g. five blocks of flats, or five parcels of land). They may also be used to split units into separate 'marketing phases' used to approximate an expected 'sales curve'. This would be achieved by two or more phases being setup for a single physical construction phase with different sales rates over different periods. Such phasing can be crucial as cash flow income from open market sale is pivotal to scheme's viability. Developer's own shared equity products should be included in the open market build units on the Phasing and Valuation sheets.

Enter check total no of residential units here	80	Populates unit numbers, sizes, values and rents AND annual c			
The number of units remaining to be entered	0			Transfer COMPLETED Ok	
Description of Property type	No units	m2	DAT category	Tenure/phase	Sales Valuation £	Weekly Rent Chargeable
Block 1	1	33	1 Bed Flat Low rise	Affordable Rent phase 1		72.73
Block 1	5	45	1 Bed Flat Low rise	Affordable Rent phase 1		72.73
Block 1	12	67	2 Bed Flat Low rise	Affordable Rent phase 1		83.36
Block 1	6	85	3 Bed Flat Low rise	Affordable Rent phase 1		93.17
Block 1	4	114	3 Bed Flat Low rise	Affordable Rent phase 1		102.97
Block 2	5	45	1 Bed Flat Low rise	Shared Ownership phase 1	130,500	
Block 2	7	67	2 Bed Flat Low rise	Shared Ownership phase 1	194,300	
Block 2	2	45	2 Bed Flat Low rise	Private Rent Build phase 1		223.00
Block 2	3	58	3 Bed Flat Low rise	Private Rent Build phase 1		288.00
Block 2	10	85	3 Bed Flat Low rise	Private Rent Build phase 1		420.50
Block 2	2	114	4 Bed + Flat Low rise	Private Rent Build phase 1		568.00
Block 2	3	45	1 Bed Flat Low rise	Open Market Build phase 1	130,500	
Block 2	13	58	2 Bed Flat Low rise	Open Market Build phase 1	168,200	
Block 2	3	90	3 Bed Flat Low rise	Open Market Build phase 1	261,000	
Block 2	4	114	4 Bed + Flat Low rise	Open Market Build phase 1	330,600	

Fig 10: Input of the residential build mix and values into the 'Res Details' sheet.

An 'Annual Costs' table is also present for rented tenures, see fig 11. These are used in computing the capital value of the affordable housing, the annual costs being deducted in computing the net rent.

Annual Costs	Management %	Void %	Repairs Fund	Yield %	Initial tranche	Rent %
Social Rented						
Shared Ownership						
Affordable Rent						
Private Rent						

Fig 11: The annual costs input. Orange cells will appear against populated tenures.

This input sheet is a 'scratch pad' area which may be revised as required without direct impact on the model. Once all entries are complete (and so no orange cells remain), then the grey 'Transfer' button on the top of the sheet should be pressed, and will use the list to populate the full model including property data and annual costs. This entry method is likely to be easiest in most cases, especially where a user is familiar with the 'GLA toolkit', or a known property build listing has already been determined. There may, for example, be more than one type of '2 bed flat', in which case

separate numbers, sizes, and values (or rent) may be entered on separate lines. The transfer routine computes the averages the model requires and copies the data to the (normally hidden) mix and values input summary sheets.

Tenure/phases without entries in the table will not appear for in the subsequent phasing and costs sheets.

Notice that if the unit control total entered in cell E5 does not match the total input on this sheet as shown in cell C37 then the transfer will abort and post a red warning at the top of the sheet (cell G6). Similarly if there are no annual costs entered in the table to the right then a warning to that affect will be seen. Otherwise a green confirmation of success will appear in the cell G6.

Also note that if a revised build listing is to be entered and transferred this can be done at any stage and will overwrite all previous data. This may be useful for testing varying mix options.

It is not mandatory to use the 'Res Details' input sheet; if the 'advanced user' setup option is selected, then data may be keyed directly instead into the Summary Input and Residential Mix sheets. Indeed data may first be transferred via the 'Res Details' sheet and the 'advanced user' option be used later to amend the transferred data. This may be more appropriate where the user is familiar with previous EAT versions of the tool. It is also necessary to use 'Summary 1 Res Mix' input sheet directly if it is desired to input numbers of rooms and person. Neither of these is necessary for the financial computation, but may be needed for reporting statistics. If car park spaces are being sold separately to dwellings then they will have to entered in 'Summary 2 Res Values', as will any ground rents chargeable.

4.4 Residential phasing

The tool has a maximum period of 120 months (10 years), The scheme start date is taken as the appraisal date entered in the site details sheet , all site activities must occur subsequent to this date. There is no need to enter an end date, the tool will compute this as the latest of all other relevant dates entered.

In addition to the assessment date, timings will be required (and highlighted in orange) for all tenure/phases that have had an associated number of units entered in the model. Note that other funding, s106 and non residential phasing are included adjacent to the associated costs in the 'Other funding', 'Res-costs' and 'Non-res' sheets respectively.

All costs and revenues cash profiles are 'flat lined' (but see discussion about multiple phasing possibilities under 'Residential Details' above). It is important the monthly sales rate is realistic in the local market circumstances, and this value is displayed for checking.

If the development's projected timetable changes, all affected start and completion dates will need to be updated. 'Golden Brick' scenarios are not covered.

Notice that dates are only displayed for entry on tenure/phases that have been entered into the model (unless the 'EAT style' displays have been specifically requested from the setup sheet, in which case all lines are shown).

4.5 Other funding

- RP Cross Subsidy (use of own assets)

  A registered social housing provider may decide to contribute funds from their own reserves, which implies a payment for affordable housing above the computed capital values. Such payments will enhance overall scheme viability. The level of RP cross subsidy is one of the assumptions that HCA is likely to explore as part of the HCA investment assessment. If an RP agrees a payment to a developer for a larger sum than the computed affordable housing valuation then the implicit cross subsidy will need to be entered here to bring up the total scheme affordable revenue to the agreed amount.

- LA re-cycled SHG or s106 commuted in lieu
- A local authority may contribute such funds to help achieve its local aims through the scheme.

4.6 Residential costs

Building cost (£ per square metre or sq ft – choose from dropdown box in title) of gross internal floorspace for building each type of housing/tenure type. It is anticipated that low-rise, high-rise (4 floors or more) and houses will have differing build costs, so separate inputs are provided. It is essential that if there is the presence of a given type of housing, a corresponding building cost must be entered for that type of housing, and these will be highlighted in orange. This assumes a serviced plot as a starting point and a 'ready for let' dwelling as an output, thus including both substructure

and superstructure but not infrastructure ('back up to pavement but no further'). Usually current building costs are used, identified from sources such as BCIS, with whom definitions are similar. Note – normal preliminary costs such as securing the site that occur in all sites of the type should be included in the base build cost. Infrastructure and externals are dealt with separately below.

The build cost should be based on the actual sustainability standards that will be achieved, which is also itself recorded within the input. (There is now no separate sustainability cost multiplier. It was recognised that to fully cost a scheme configuration that was not to be built was onerous for small developments.) The HCA is likely to consider the updated DCLG: Cost of Building to the Code for Sustainable Homes (Aug 11) when evaluating such bids. Additionally evolving experience will also inform this view.

It should be ensured that the declared works costs do not include any:

- Design fees
- Planning and building regulation charges
- Structural warranty/NHBC fees
- Minor pre-tender works

Notice that Net to Gross adjustment definition is changed from EAT and now defined according to surveying convention, i.e. the percentage to add to net area to obtain gross, e.g. 15%.

Particular care is required to accurately declare the works figure for a scheme when using design and build contracts, as the contract sum will include various fees as well as the works. These fees must be disaggregated and included in the appropriate cost figure, not the works figure.

4.7 External works and infrastructure

Site costs necessary to provide 'serviced plots' for building construction from unoccupied, secured, and uncontaminated site. Where such costs also serve other development which is not part of the application (e.g. a spine road), costs should be attributed across the elements and a statement will need to be provided to justify the percentage allocation of common costs to each element. Any cost of surety bonds to the LPA for performance of these undertakings should be included in the relevant line. Notice that fees and contingency percentages are not applied to these items, so any such amounts should be included in these values.

4.8 Site abnormals

ONLY for items not normally expected for sites of its kind eg flood protection, ground stabilisation for abnormal conditions, noise abatement. The site investigation report is likely to be required. The 'other' line might be used for items such as third party land/ransom costs including easements and covenants.

4.9 Fees

The building cost fees, such as architect, quantity surveyors fees, project management, and building control fees as a percentage of building costs. Notice this is not applied to External and other works. Such costs are liable to have fees at differing rates, and should be entered at a gross of fees value.

- Will be phased 50% at construction start, 50% spread across build.

4.10 Building contingencies

The percentage of building costs that are set-aside to counter unanticipated building events/problems in schemes where there is a high level of build cost risk (e.g. refurbishments, large complex schemes etc). Generally for volume house building on greenfield sites no contingency on the basic house building is to be anticipated. Notice this percentage is not applied to External and other works. Such costs are liable to have fees at differing rates, and should be entered at a gross of contingencies value.

4.11 Statutory payments

The amount of money payable (£) primarily for s106 contributions and Community Infrastructure Levy (CIL). These payments can be divided into 14 types, three of which are user-defined. Typical types of s106 payments may include contributions towards infrastructure, public transport, community facilities (schools, doctor's surgery, community centres

etc), and public realm and environment (trees, landscaping etc). The user definable types may be used for items such as Environmental and Ecological costs, Landfill tax, and archaeology. Notice that s278 Highway and s104 sewers agreement costs are categorised under the external works section. There is a line for CIL and one for a LPA 'per unit' 'tariff'. All others values are a total scheme sum. All values set require a date for phasing.

EXCLUDES s106 housing unless a commuted sum payment is required

4.12 Finance cost

The interest rate is the cost of funds to the scheme developer, it is applied to the net cumulative negative cash balance each month on the scheme as a whole. It depends on the developer, the perceived scheme risk, and the state of the financial markets. There is also a credit interest rate, which is applied should the cumulative month end balance be positive. If the developer has other variable borrowings (such as an overdraft), or other investment opportunities, then the value of credit balances in reducing overall finance charges is potentially the same as the debit interest charge. If not, and the developer would simply put the funds into the bank, then a lower rate is appropriate.

4.13 Marketing costs

See pop up notes attached to each input cell.

4.14 Developers overheads and return for risk

A fixed overhead amount plus a percentage of open market capital value (including private rented units). A percentage of affordable housing build costs; as the developer is holding no sales risk then we expect a contract type profit based on costs. NB: Even if the developer for a particular scheme is a 'not for profit' RP, it still requires a yield to cover the risk of investing, and for any internal funds committed.

4.15 Non residential

This sheet is not visible when the simplified input screens option is chosen, the advanced user selection needs to be made. There are sections for revenue, costs, and phasing for office, retail, industrial, leisure, and community use.

4.16 Notes and memos

By keeping any intermediate computations on this page (eg on cost computations) all information will stay attached to the model itself.

4.17 Errors and warnings

If the top line of input sheets and output summaries, show 'incomplete entry- see warnings sheet' then this signifies that a necessary input hasn't been entered. The warnings sheet should then be selected from its 'tab' to check for listed warning notifications, which will inform the user of necessary input missing. Conversely a value on the top line shows that input is consistent; of course a set of inputs may still need to be added for a particular scheme, e.g. abnormals. The checks are simply that each sub-set of data is complete.

4.18 FAQs

Where do I obtain the model?

It is suggested that prior to completing an appraisal a blank copy of the current version is obtained from the HCA website. Entering "development viability tool" into the search box on the home page will find the relevant page from which a download maybe made.

Affordable rent and service charges

Affordable rents entered in sheet 'Res-details' are actual values expected to be charged. The model derives the implied market rent (based by default at 80%) and stores this in sheet 'Summary 2,' in order that advanced users may test amendments to the parameter. Using this method it is possible to have two phases of affordable rent charged at separate percentages of market rent.

For both the affordable and open market housing, have been ignored in this development appraisal tool. These charges are payable by the individual occupiers of the units and therefore do not have any impact on the scheme residual. However they are relevant to the affordability of housing to tenants, and are an issue that must be deemed as satisfactory in considering local housing need. In particular note the 80% of market rent for affordable rent includes any service charge, therefore rents need to be reduced by the service charge amount for this tenure. Practical evidence is that most service charge costs are determined at design time, and assurance this issue has received consideration by that stage is likely to be crucial in determining the final outcome.

There is a simple proforma in the notes and memos sheet that may be used to record the market rent/service charge/percentage of market/affordable rent computation.

VAT

The model transfers all entered costs as cash flow items, and does not make any VAT reclaim computations. Therefore all costs should be entered net of any reclaimable VAT, but gross of any irreclaimable.

Understanding the results

Once all of the various inputs have been entered into the relevant sheets, the results are displayed on the 'Output - Full' sheet. The sheet is 'collapsible' by pressing the yellow 'Summary' button at the top of the sheet, which is then in a summary format suitable for single page printing. The 'Detail' button alongside reverses this action to display all lines. The top section of the detailed sheet provides a comprehensive examination of the mix and values of each housing type, as well as the key values and costs. It is a good place to check the reasonableness of results, in proportion to the remainder of the scheme.

The final 'summation' figure near the bottom of the 'Output - Full' sheet is the site surplus (or deficit) at completion. This is then discounted back to the scheme start date to provide that value at the decision date, and this is repeated at the top of every input page. As per industry norm this is carried out using the interest rate. [There are reasons to regard this procedure as less than economically ideal, and for this reason an IRR measure is also computed (see below)]. A surplus suggests the site is viable given all modelled assumptions, whereas a deficit measures the viability 'gap'. Note this is based on land valuation, not purchase price paid. Similarly land holding costs are included in the assessment only from the scheme assessment start date. (Prior holding costs are 'sunk' i.e. incurred regardless of the develop/ don't develop action and thus not relevant to the decision). Notice, that in contrast to earlier EAT versions of the tool, there is no HCA financial support or grant included in these computations.

The scheme Internal Rate of Return (IRR) shows the true rate of return for the funds invested in the development of the scheme. It is computed before interest charges and developer profit to avoid double counting. Unlike crude margin percentages, or even a 'Return on Capital Employed' measure, the IRR takes into account the full cash flow profile. For example, other things being equal, IRR would be higher for a scheme where the peak capital requirement is for a briefer period (such as housing that is built in phases compared to a blocks of flat). Notice the IRR is computed based on monthly cash flows for accuracy, but shown as an annual rate.

An alternative tightly summarised scheme presentation is available on the 'GLA style output' sheet, which is particularly suited to previous users of that model.

The remaining outputs require the setup button 'Advanced User' to be selected in order to be visible.

5.1 Cash flows

There is a summary quarterly cash flow output, suitable for printing. Additionally there is a detailed monthly cash flow computation sheet, with (from the top down) phasing, residential, non residential and combined sections. All computations are visible.

5.2 Off-site provision of affordable housing

For the off-site provision of affordable housing, different development appraisals should be undertaken for each component of the overall development. For instance, if the proposed development involved two sites, there should be two different development appraisals – the first for the original site and the second for the affordable housing site. It is likely that the original site will have a large, positive residual surplus and the second site will have a deficit. Once the two or more development appraisals have been carried out then the residual land values should be combined in the manner described above to give an overall surplus/(deficit) for the proposed development as a whole. This combined surplus/(deficit) will indicate the viability of the development as a whole.

If payment in lieu of affordable housing ('commuted sum') is made this should be inputted as a payment in the s106 costs heading in the 'Other Funding' sheet.

5.3 Saving and printing the results

As usual with Excel, the tool model can be saved at any time using the 'Save As' option in the 'File' menu. It is recommended that the file is saved as an Excel 97-03 file or Excel 2007 'macro enabled workbook' in the appropriate directory and that the filename clearly states the particulars of the scheme in question.

Once the top line of the screen (which is identical on all input sheets) is displaying a numeric residual valuation result, as opposed to a warning message, you have a consistent model you may print. Depending on what you want to see you might choose

- The 'Output Full' sheet (from grey tab on the right) may be printed to give a three page summary starting with the scheme statistics and moving on to a line by line detailed financial residual valuation.
- The yellow summary button on this 'Output Full' sheet "compresses" the summary down to one page of 'sub total' values from the valuation.
- The 'GLA style Output' sheet gives a one page summary in the format familiar to users of the GLA tool.
- For a closer examination of a scheme finances a quarterly cashflow may be printed. Got to 'Input 0 –Setup' and select the 'Advanced user' button. You will then be able to find a sheet with a grey tab sheet named "Output Qtrly CF' next to the 'Full Output'. Printing this gives a one page cash flow summary, but A3 size is required for legibility.
- If hardcopy of inputs is required the relevant input sheets should be printed, each is formatted to the minimum number of pages necessary for easy reading.

5.4 Scheme history

Scheme information can easily be changed at a later date once it is clearer what the various costs, values and timings etc will be. It is recommended that once a scheme has been modified, the file is re-saved under a different name (possibly using the date of change in the filename). These stored models will provide a history, thus allowing monitoring of a development through its various stages from inception stage to the latest reality. Further detail can be recorded in the notes sheet.

Each sheet may be printed if paper copy is desired. The Quarterly Cash Flow, Output Full (set to summary level) and GLA Style Output sheets should print neatly onto one sheet of A4.

5.5 Evidencing Grant Additionality

The Affordable Housing Framework is clear that any Grant from central government is provided only to provide additional Affordable Homes above and beyond that possible without grant. In order to use DAT to evidence this the following procedure should be adopted

- Produce the DAT for the no grant case, and save a copy of the file as a 'Base case'.
- Make changes only to the housing mix that are additional to the Base case
- The difference in residual between the two models is the valuation of additonality arising from the mix change
- Such evidence is a necessary but not, of itself, sufficient part of the case for grant. Notice too that grant is not normally made for "s106 schemes" under NAHP 11-15.

Analytical tools

These are accessed by pressing the 'Add Tools' button on the 'Input 0 – Setup' sheet when 'Show scheme' is selected. They are intended primarily for HCA use, but may also be of interested to those familiar with financial modelling concepts. The functionality most likely to be of interest is the sensitivity analysis.

6.1 Scenario sensitivity analysis

Residual values are the result of taking one large total (costs) away from another large number (revenues). Consequently a small percentage change in either large number has the potential to make a large percentage change in the resulting 'residual' difference. Owing to this sensitivity, slight changes in a few of the many variables in the model will often result in a wide range of residuals, and could easily eliminate the surplus/(deficit). For this reason a scenario capability is provided to rapidly test to these sensitivities.

		Live model values	Reduce s106 payments	Reduced rental yield	Reduced Annual Costs	Reduced build cost
	Press to Run Scenario, Record and Restore		% change in Capital (Sales) Value	% change in Capital (Sales) Value	% change in Capital (Sales) Value	% change in Capital (Sales) Value
INPUTS						
Open	Build phase 1	N/A	0	0	0	0
Shared	All unit type Sale values	N/A	0	0	0	0
	Initial Tranche	35%	35%	35%	35%	35%
			% change in Building Costs	% change in Building Costs	% change in Building Costs	% change in Building Costs
ALL	% change (applied to all unit types)		-5%	-5%	-5%	-5%
			Revised Percentage	Revised Percentage	Revised Percentage	Revised Percentage
Affordable RENT	Percentage of market rent	80%	80%	80%	80%	80%
	Man. Costs (% of AFFORDABLE rent)	20.0%	15.0%	15.0%	15.0%	20.0%
	Voids / bad debts (% of rent)	2.5%	2.5%	2.5%	2.5%	2.5%
	Repairs Fund (% of rent)	20.0%	15.0%	15.0%	15.0%	20.0%
	Rent Yield Capitalisation (%)	6.00%	5.00%	5.00%	6.00%	6.00%
FINANCE	Interest Rate (%)	6.00%	6.00%	6.00%	6.00%	6.00%
	additional s106 (negative for reduction)		-100000	0	0	0
	Enter date of additional s106 payment		41275			
	DEVELOPER'S OVERHEAD AND RETURN FOR RISK (before taxation) & Overhead					
	Open Market Housing (% of CV)	15.0%	15.0%	15.0%	15.0%	15.0%
	Affordable Housing (%)	3.7%	3.7%	3.7%	3.7%	3.7%
	Land value	1,500,000	1,500,000	1,500,000	1,500,000	1,500,000
OUTPUTS	Present Value of Surplus (Deficit) at month 0	477,550	1,502,088	1,402,088	1,119,428	910,049

Fig 12: A combination of changes that would be sufficient for the surplus to match the land valuation.

Sensitivity analysis can be completed within the tool for increasing / decreasing build costs and capital values, s106 costs, operational costs of the affordable rented element, financing interest rate, rental yields and developer returns. Normally small variations (say +-2.5%, 5%, 10%) are entered in the 'New scenario to test column' of the scenario sheet. Pressing the 'Run Scenario' button computes the resulting residual value and stores this at the bottom of a new scenario

column created to the right of the input, but leaves the model data in its original state. Text can be entered at the top of the scenario column for the run, as an aide memoir as to its purpose. Entries made in the 'New scenario to test' column are combined to run as a single scenario. Every run will create a new scenario column, and the existing scenarios will shift to the right in order to preserve results. The example in fig 12 above shows how a combination of changes was built up by adding one extra entry between each press of the scenario run button in order for the surplus (originally £477,600) to match the land valuation (£1,5m).

To see the impact of singular changes, these must be entered one at a time, pressing the 'reset' button after each scenario run. Old scenarios may be deleted simply by deleting the entire column or columns. More detail of the operation of scenarios may be found on the scenario sheet itself.

6.2 Output - affordable additionality

The purpose of this sheet is to show

- The overall impact of the proposed affordable housing mix on viability. For instance this allows the affordable housing impact to be compared to other costs, such as s106 infrastructure requirements.
- A quick estimate of how changes in the tenure mix would change the viability e.g. would a particular switch from rent to LCHO make a scheme viable without a need for grant?

The analysis is computed by calculating all tenure revenues and costs on a square metre basis. This reveals the contribution towards scheme costs provided for each square metre of each tenure type built. Affordable rent may or may not cover its costs, whilst LCHO will normally provide a contribution, albeit at a considerably lower value per sq m than open market. From these results the impact of switches per sq m between affordable tenures and open market sales is arrived by simple arithmetic. This then allows the two key results to be computed.

- The total impact of affordable provision on the scheme
- The number of units of Affordable Rent that would need to be switched to either LCHO or open market sales to eliminate a surplus or deficit

It should be noted that the 'Contribution Analysis' on which this section is based is necessarily an estimation. For example, changing tenures may in practice require changes in the physical scheme. Therefore the precise impact of changing tenures would require a revised scheme to be fully appraised. Nevertheless estimation from marginal contribution analysis is capable of providing sound estimates that should prove useful in appreciation of a scheme's economics. To further investigate the impact of such proposals the tenure mix in the model could be amended to test the results. See section 4.5

Key changes from the Economic Assessment Tool

The Development Appraisal Tool was developed by the HCA from the Economic Assessment Tool (EAT) (provided by GVA Grimley) with a number of modifications:

- There are more tenure options, around the new affordable rent and private rented units, plus more private sales phases..
- HCA support (grant or investment) is not an input, rather it can be considered if the output of the model shows a deficit.
- The cash flow and computations are 'open' (i.e. can be made visible to users.)
- The user interface has been significantly amended. Entries are validated against expected ranges, user guidance is embedded, and input screens redesigned with specific colour coding. Input values may be set to either 'per square foot' or 'per square metre'. There is a 'rapid input' option for mix and values on a single sheet. A list of 'mandatory' entries still required can be seen at any time. Advice from M3 Ltd with regards to this aspect of the tool is acknowledged.
- The tool can also be used to value the capitalised net income cash flows arising from the affordable housing element of a scheme in isolation. i.e. this gives the price we should expect an RP to pay for the Affordable Housing.
- Reporting of the internal rate of return for the scheme, a discounted cash flow measure. This takes account the time profile for which capital is invested, which particularly differs between housing and blocks of flats. Thus it is a more complete measure for comparisons than just the % margin on sales value.
- Land value is treated as an input, but the model can be used to calculate a residual land value output in the same way the EAT.
- The model allows rapid scenario testing.
- The financial impact of tenure changes (both between affordable tenures and to open market) are estimated using contribution analysis.
- Uploading of data for collation of benchmarks is possible.

Version List of maintenance updates

V1.0	Initial version made available
V1.01	Fixes for Security preventing selection of cost inputs by sq ft, Social Rent phasing prevented from hiding.even where input required
V1.02	100% private sale residential input transfers no .longer trigger error message EAT style input selection allows date phasings to be entered before any unit input Build Cost input by Sq Ft now possible.
V1.03	Scheme start auto computes from Assessment Date. Fixed protection lock out of Other Acq. Costs Corrected Decant phasing GLA style output values amended to include phase 2 AR & LCHO
V1.04	CIL amended to work with Gross Net Area instead of Net Internal Area Some phasing date validation amendments Fix for error erroneous error message appearance on GLA style output Monthly Sales rate computation amended Abnormal items 'Other 2' phasing amended to spread correctly
V1.04b	Ground rents applied only to flats.
V2.0	Allows computation of the Residual Land value. Fixes to Private Rental & car parking.
V2.02	Tested under Excel 2010. Fix to Private rental Margin.

Technical note on Excel

DAT was developed for a PC/Windows/Excel platform

It requires Excel 2003 on (i.e. will not function on Excel 2000).

The Excel model must be opened with 'Macros Enabled'. You may need to modify your Macro security setting, please see http://office.microsoft.com/en-us/excel-help/about-macro-security-HP003084611.aspx for details. It is suggested no other spreadsheets are opened while the model is in use, and only one version is loaded at one time.

Windows Excel v2003: if Excel is set to a 'medium' security setting is then the user is asked whether to enable macros when the model loads, to which the answer must be 'Yes' in order to use DAT. If you are presented with a dialogue box that questions whether you want to install an 'Add in' this can be declined, DAT will still function. DAT v2 no longer requires the Analysis Toolpak to be installed.
Windows Excel v2007: Care is required in v2007 onwards to avoid Macros being removed or disabled by security settings. If the Excel default is set to save files as .xlsx then macros will be removed. Use File 'Save as' to save as a .xlsm, or if in doubt a Excel 97-2003 format. If security options are set to prevent macros running then DAT cannot function; a 'Security Alert' dialogue box as below may appear. The security warnings 'enable' option must then be chosen. Further information is available on the Microsoft site, see http://office.microsoft.com/en-us/excel-help/change-macro-security-settings-in-excel-HP010096919.aspx?CTT=1#_Toc272500832 Change macro security settings

Microsoft Office Security Options
Security Alert - Macros & ActiveX
Macros & ActiveX
Macros and one or more ActiveX controls have been disabled. This active content might contain viruses or other security hazards. Do not enable this content unless you trust the source of this file.
Warning: It is not possible to determine that this content came from a trustworthy source. You should leave this content disabled unless the content provides critical functionality and you trust its source.
More information
File Path: C:\...ents\homes and communities\Demo DAT Release candidate macro.xlsm
Help protect me from unknown content (recommended)
Enable this content
Open the Trust Center
OK
Cancel

Windows Excel V2010 DAT V2.1 has been tested under Excel 2010. On opening the message bar will display a security warning "Macros have been disabled" (unless previously disabled). Press the button to enable content, and set as 'trusted document' if offered.

OpenOffice & LibreOffice Calc. Will not run Visual Basic for Application Macros, consequently DAT doesn't function.

Mac Excel 2008. Will not run Visual Basic for Application Macros, consequently DAT doesn't function.

Mac Excel 2011. Will run VBA and can run DAT, but ActiveX buttons and controls do not function. This can be worked around by manually unhiding required sheets. Email DATEnquiries@hca.gsi.gov.uk for further details.

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The Homes and communities Agency will consider providing literature in alternative formats upon request.

Please contact us on 0300 1234 5000 or by email at mail@homes and communities.co.uk for further information

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